

## CLAIMS

What is claimed is:

- 5        1. A fusion joining device for plastic tubes that heats the joint portion of plastic tubes for fusion joining the joint portion, comprising a fusion joining head for sandwiching said joint portion from both sides to heat the joint portion, wherein said fusion joining head comprises a pair of members for  
10 heat conduction, a pair of clampers, and a pair of heaters; said pair of members for heat conduction is disposed so as to be opposed to each other through said joint portion; said pair of clampers is supported such that it can be pivoted between the closed position where it sandwiches said  
15 joint portion from both sides through said pair of members for heat conduction, and the open position where the spacing between said pair of members for heat conduction is widened; and
- said pair of heaters is made of a resistance heat generation  
20 material in the shape of a sheet, and is formed so as to be along said pair of members for heat conduction, respectively, for heating said joint portion through the pair of members for heat conduction.
2. The fusion joining device for plastic tubes of claim  
25 1, wherein
- it comprises a supporting head for removably supporting said fusion joining head, and a heating circuit for supplying power to said fusion joining head side through the supporting head;
- 30        said supporting head supports said pair of clampers pivotably between said closed position and said open position; said heating circuit comprises a pair of head electrodes; one of said pair of head electrodes is provided on said fusion joining head side;
- 35        the other of said pair of head electrodes is provided on said supporting head side;

said pair of head electrodes is connected to each other when said fusion joining head is loaded onto said supporting head; and

at least one of said pair of head electrodes is energized  
5 in the direction in which it is connected to the other of said pair of head electrodes.

3. The fusion joining device for plastic tubes of claim 1, wherein

said pair of heaters are connected in series with each  
10 other.

4. The fusion joining device for plastic tubes of claim 1, wherein

said heating circuit comprises a pair of clamper electrodes;

15 one of said pair of clamper electrodes is provided in one of said pair of clampers, being connected to one of said pair of heaters;

the other of said pair of clamper electrodes is provided in the other of said pair of clampers, being connected to the  
20 other of said pair of heaters;

said pair of heaters is connected to the power supply side such that a voltage is generated across the pair of heaters; and

said pair of clamper electrodes is disposed so as to be  
25 connected to each other at least when said pair of clampers is pivoted to said closed position.

5. The fusion joining device for plastic tubes of claim 1, wherein

it comprises controlling means for adjusting the power to  
30 be supplied to said fusion joining head side through said supporting head;

said supporting head has a data detection section;

said fusion joining head has specific data for the fusion joining head;

35 said data detection section detects said specific data when said fusion joining head is loaded onto said supporting head;

and

said controlling means adjusts said power on the basis of the specific data detected by said data detection section.

6. The fusion joining device for plastic tubes of claim  
5 1, wherein

said clamper comprises exhaust vents; and

said exhaust vents are for exhausting the cooling air fed into said fusion joining head through said supporting head to the outside of said fusion joining head.

10 7. The fusion joining device for plastic tubes of claim 1, wherein

said fusion joining head comprises a pair of adiabatic members;

said pair of clampers comprises opposed surfaces and  
15 accommodation recesses;

said opposed surfaces are surfaces which are opposed to each other when said pair of clampers is in said closed position, and where said adiabatic members are disposed;

said accommodation recesses are provided in said opposed  
20 surfaces for accommodating said heaters and said members for heat conduction;

said heater is formed approximately in the shape of  $\Omega$  in section, comprising a central portion and both-end portions which extend from both ends of the central portion,  
25 respectively;

the central portion of said heater is in the inside of the accommodation recess of said clamper, being formed so as to be along said member for heat conduction; and

The both-end portion of said heater is extended from the  
30 accommodation recess on said clamper to the opposed surface side of said clamper, being disposed so as to be along said adiabatic member.